

CLAIMS

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a1 } 1. An optical power control system configured for use with a wavelength division demultiplexer, said optical power control system comprising:

5 a plurality of photodetectors connected so as to monitor output power on a plurality of outputs of said demultiplexer, each of said outputs carrying a different WDM channel; and

a gain control system that receives power level indications from said plurality of photodetectors and controls a gain of an optical amplification system providing input to
10 said demultiplexer; and

wherein said gain control system sets a gain of said optical amplification system such that a power level indication based on said output powers monitored by said plurality of photodetectors is set within a desired range.

15 2. The system of claim 1 wherein said power level indication comprises an average of said output powers monitored by said plurality of photodetectors.

3. The system of claim 2 wherein said desired range corresponds to an optical receiver dynamic range.

20 4. The system of claim 1 further comprising:

~~an optical filter having dynamically controllable response characteristics, said optical filter receiving input from said optical amplification system and outputting a filtered optical signal to said demultiplexing system.~~

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5. The system of claim 4 wherein said optical filter comprises a tilt control filter.

Sub a' 6. The system of claim 4 wherein said gain control system sets a tilt of said tilt control filter to reduce a difference in monitored output powers for a highest WDM channel and a lowest WDM channel.

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7. A WDM receiver system comprising:

an optical amplifier system having variable gain and receiving a WDM signal comprising multiple wavelengths;

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a demultiplexer receiving an amplified WDM signal from said optical amplifier system and separating said amplified WDM signal into a plurality of single wavelength signals each corresponding to a different WDM channel;

a plurality of photodetectors monitoring power levels of said plurality of single wavelength signals; and

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a gain control system that receives power level indications from said plurality of photodetectors and controls a gain of said optical amplifier system such that a power level indication based on said output powers monitored by said plurality of photodetectors is set within a desired range.

8. The system of claim 7 wherein said power level indication comprises an average of said output powers monitored by said plurality of photodetectors.

5 9. The system of claim 8 wherein said desired range corresponds to an optical receiver dynamic range.

10. The system of claim 7 further comprising:

an optical filter having dynamically controllable response characteristics, said
10 optical filter receiving input from said optical amplifier system and outputting a filtered optical signal to said demultiplexer.

11. The system of claim 10 wherein said optical filter comprises a tilt control filter.

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12. The system of claim 10 wherein said gain control system sets a tilt of said tilt
control filter to reduce a difference in monitored output powers for a highest WDM
channel and a lowest WDM channel.

20 13. In a WDM receiver system, a method for controlling power on multiple WDM
channels, said method comprising:
monitoring output powers on individual ones of said multiple WDM channels;
determining a power level indication based on said monitored output powers; and
setting amplification on a signal including said multiple WDM channels so that
said power level indication falls within a desired range.

means for setting amplification on a signal including said multiple WDM signals so that said power level indication falls within a desired range.

5 19. The apparatus of claim 18 wherein said power level indication comprises an average of said monitored output powers.

20. The apparatus of claim 18 further comprising:
means for separating said multiple WDM channels into individual wavelength
10 .signals.

21. The apparatus of claim 18 further comprising:
means for filtering said signal including said multiple WDM signals to adjust gain
tilt among said multiple WDM channels.

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al 22. The apparatus of claim 21 wherein said filtering means comprises:
means for filtering said signal using filter response characteristics that reduce a
difference in monitored output powers for a highest WDM channel and a lowest WDM
channel.

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